

REMARKS

Claims 1-21 are pending in the application. Claims 22 and 23 are newly added. Reconsideration of this application is respectfully requested.

The Office Action rejects claims 1-20 under 35 U.S.C 103(a) as unpatentable over U.S. Patent No. 6,361,138 to Seino et al., hereafter Seino, in view of U.S Patent No. 5,459,496 to Hanabusa et al., hereafter Hanabusa.

Independent claims 1 and 10 are directed to a method and a processor for determining service criteria of a printhead in a printer. The inventors have recognized that based on various criteria (that are discussed at pages 13-15 of the specification), an age of the printhead can be determined and a service procedure that is based on the calculated age is selected so as to have a prolonging impact on the lifetime of the printhead.

In contrast, Seino discloses a method and apparatus for collecting and storing the use history of a replaceable ink cartridge that supplies ink to a separate printhead. That is, Seino's procedures deal with replaceable ink cartridges that have a short lifetime compared to the lifetime of the printhead. The use history is stored in a memory built into the replaceable ink cartridge, which upon removal can be returned to the manufacturer for analysis.

Seino teaches a procedure in Fig. 6 for filling the printhead with ink from a newly installed ink cartridge and a procedure in Fig. 7 that is performed after the printhead is filled with ink. These procedures have nothing to do with selecting an appropriate service procedure for the printhead itself based on a calculated age of the printhead as recited in claims 1 and 10.

Seino lacks the step of selecting a service procedure based on the determined calculated age of the printhead as recited in claims 1 and 10. Since the selecting step is related to the calculated age determining step of claims 1 and 10, one needs to consider how the final Office Action reads the determining step on Seino.

The Office Action reads the step of determining a calculated age of the printhead on step C. Seino's step C determines whether a newly installed ink cartridge is within a permissible service life. Step C makes this determination based on a comparison of the current date with an expiration date of the ink cartridge (column 4, lines 66 and 67), which was stored in the cartridge memory 32, 34 at the time of factory shipment (column 4, lines 58-62). If the current time is less than the expiration date, the procedure of Figs. 6 and 7 continues. If greater, an error message is displayed (step D) and the process is stuck in the loop of steps A, B, C, and D. That is, step C merely provides a go/no-go determination. If less, go ahead with the Figs. 6 and 7 procedure. If greater, do not go head with the procedure.

The Office Action reads the selecting step on step F of Fig. 6 and the passage at column 4, line 56, to column 5, line 27. Step F determines if the identity of the newly installed ink cartridge is identical to an identity of an ink cartridge that has ever been attached to the printhead. Step F is not described as considering a calculated age in its determination. All that step F considers is a comparison of the identity of the newly installed ink cartridge with that of all previously installed ink cartridges. Based on step F's determination of ink cartridge identities, a selection is made to suck with ink by normal suction or to choose large-amount suction or middle-amount suction based on the determination of step H. Step H makes this choice based on whether an operator has designated a refill by operating a refill switch (column 4, lines 22 and 23). The reason for the choice is an operator-determined need for more or less degassification of the printhead (column 4, lines 19-39).

Thus, Seino's step F selects a suction procedure based on an identity of ink cartridge identifications and not on calculated age of the ink cartridges as recited in claims 1 and 10. Moreover, the selection of suction procedures by step H is based on an operator determination of whether more or less degassification is needed and not on the calculated age of the ink cartridge. The bottom line is that Seino teaches (1) to use calculated age of an ink cartridge to solely make a go/no-go determination of whether to proceed or not to proceed with the Figs. 6 and 7 procedure and (2) to make an ink cartridge identity determination and a user operated switch to select a particular suction amount for the purpose of normal, middle-amount or large-amount for degassification purposes. Seino contains no teaching to select a service procedure based on the calculated age.

The Examiner contends that "age is equivalent to use. Refer to column 3, lines 47-49, Seino discloses that the ink capacity and number of times maintenance and the degree of each maintenance have been in the storage, and based on these information in the storage, suction is executed."

This contention is traversed. The data mentioned at column 3, lines 47-49, is not used in the determination made by either step C or step F. As noted above, step C merely compares a current date with the expiration date of the ink cartridge, which was stored in the ink cartridge memory at the time of factory shipment. In fact, the column 3, line 47-49, data is not even read from the ink cartridge memory for the determinations made by steps B and C. The data read for these determinations is described at column 4, lines 59-62, as "manufacturing date, the expiration date, the data for specifying adaptable printing apparatuses, the ink capacity, etc., of the ink cartridge, which were previously stored at the factory shipment". Therefore, the Examiner's contention that based on the column 3, lines 47-49, data the suction is executed is incorrect. Rather, suction of step G is made based on the determination of step F, which is a comparison of

the identity of the current ink cartridge with identities of previously attached ink cartridges.

Furthermore, “age is not equivalent to use” in Seino. For example, a new unused ink cartridge, which has already exceeded its expiration date, would be rejected by Seino’s step C. That is, step C merely makes a determination of whether the current date exceeds the expiration date of the ink cartridge. This determination has nothing to do with use as illustrated by this example in which the ink cartridge is unused and rejected.

The Office Action concedes that Seino does not teach “the determination of a calculated age” of the printhead as claimed. The final Office Action contends that it is well known in the art that the ink cartridge is an integral part of the printhead, citing Hanabusa as evidence thereof. The Office Action concludes that it would have been obvious to one of ordinary skill in the art to calculate the age of the printhead by calculating the age of the ink cartridge as taught by Seino, since it was well known in the art that the ink cartridge is an integral part of the printhead as taught by Hanabusa.

The conclusion of obviousness is erroneous. First, Seino lacks the steps of determining and selecting as discussed above. Hanabusa does not teach the steps of determining and selecting. Therefore, the combination of Seino and Hanabusa cannot render the invention claimed by claims 1 and 10 obvious.

Second, the alleged obviousness combination is improperly based on the hindsight of Applicants’ disclosure. Such hindsight reconstruction of the art cannot be the basis of a rejection under 35 U.S.C. 103. The prior art itself must suggest that modification or provide the reason or motivation for making such modification. In re Laskowski, 871 F.2d 115, 117, 10 USPQ 2d 1397, 1398-1399 (CAFC, 1989). “The invention must be viewed not after the blueprint has been drawn by the inventor, but as it would have been perceived in the state of the art

that existed at the time the invention was made.” Sensonics Inc. v. Aerosonic Corp. 38 USPQ 2d 1551, 1554 (CAFC, 1996), citing Interconnect Planning Corp. v. Feil, 774 F. 2d 1132, 1138, 227 USPQ 543, 547 (CAFC, 1985).

Seino determines an identity of a newly installed ink cartridge (a new cartridge or one that still has useful life) and selects an ink cartridge filling procedure based on the identity determination. Hanabusa’s integral printhead and ink cartridge has no need for such determination and selection since the printhead and ink cartridge are integral. That is, there is no need to make any determination of ink cartridge compatibility with the printhead. Thus, there is no motivation for one skilled in the art to combine Seino and Hanabusa.

For the reasons set forth above, it is submitted that the rejection of claims 1-20 under 35 U.S.C. 103(a) is erroneous and should be withdrawn.

Claim 21 is rejected under 35 U.S.C. 103(a) as unpatentable over Seino in view of Hanabusa as applied to claim 1 and further in view of EP 034935 to Brunch et al., hereafter Brunch.

It is submitted that claim 21 is allowable for the same reasons set forth for the allowance of claim 1, which is the parent claim of claim 21.

For the reason set forth above, it is submitted that the rejection of claim 21 under 35 U.S.C. 103(a) is erroneous and should be withdrawn.

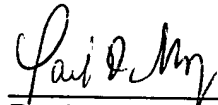
Newly presented claim 22 recites that the service procedure is selected from a plurality of service procedures for curing a failure based on the calculated age. Newly presented claim 23 recites that the service procedure is selected from a plurality of service procedures such that an intensity and a frequency of the service procedures increase corresponding to the age of the printhead. Support for claims 22 and 23 is found in the specification at page 14, lines 9-22.

None of the cited references teaches these features. Accordingly, it is submitted that claims 22 and 23 distinguish from the cited art and are, therefore, allowable.

It is respectfully requested for the reasons set forth above that the rejections under 35 U.S.C. 103(a) be withdrawn, that claims 1-23 be allowed and that this application be passed to issue.

Respectfully Submitted,

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